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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,321	04/01/2004	Eric Bonabeau	ICO-001.01	7561

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EXAMINER
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HOLMES, MICHAEL B

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/815,321

**Applicant(s)**

BONABEAU ET AL.

**Examiner**

Michael B. Holmes

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE (3) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Office Action.



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**Examiner's Detailed Office Action**

1. This Office Action is responsive to application 10/815,321, filed April 01, 2004.
2. Claims 1-21 have been examined.

**Specification Objection**

3. The abstract of the disclosure is objected to because it contains the phrase "Disclosed are." The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc. Correction is required. See MPEP § 608.01(b).

**Claim Objection**

4. Claim 14 is objected to because of the following informalities:  
It appears as if applicant made a typo regarding the dependency of claim 14. *Examiner interprets the intended meaning was* claim 13. Appropriate correction is required.

## Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Applicant's invention disclosed in claims 1-20 is directed to nonstatutory subject matter i.e., an *abstract idea*. It is the examiner's position applicant's invention as claimed is not limited to a *practical application* in the technological arts. While, the claims *appear* to be directed towards a *method* performed on a computer. However, examination has revealed no computer or computer-readable medium has been disclosed by applicant.

7. This deficiency can lead to speculation that applicant's invention may to implemented on paper or by some other means not associated with a computing device. Examiner will not speculate as to the intended meaning, and will leave that to applicant to further clarify, since applicant discloses no "certain substances" that have been "transformed or reduced" that is, applicant claims disclose no *specific* computer or computer-readable medium.

8. Furthermore, there is no manipulation of *specific* data representing physical objects or activities constituting what one may classify as pre-computer activity, nor does applicant disclose any *specific* independent physical acts being performed by the invention constituting post-computer activity. As aforementioned, it is the examiner's position the claims as presented are nonstatutory, and merely manipulate *abstract ideas* in general without limitation to a practical application whereby "certain substances" are transformed or reduced on a computer or a computer-readable medium.

9. Therefore, claims 1-20 are rejected under 35 USC § 101.

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10. It should be noted that if the claims were amended to recite a “computer,” “processor,” “computer-implemented,” or whatever word(s) or phrase(s) the written description of the specification recites for that feature(s) of the computer. The rejection under 35 USC § 101 would be withdrawn.

### Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-21 are rejected under 35 U.S.C. 102(e) as being anticipated by

*Pelikan et al.* (USPAP Pub. No.: 2003/0055614 A1).

Regarding claim 1, *Pelikan et al.* describes a method [see 0204], comprising:

generating a solution set [see 0033] based on an evolutionary scheme [see 0010, 0032 “*Bayesian optimization method*” & 0035 “*Embodiments of the present invention will be useful using any selection operator that are commonly known for use in genetic and other evolutionary optimization methods.*”] in which an objective function is a priori mathematically unexpressed [see 0035 “*Fitness function*” note: *Examiner’s interpretation coincides with applicant’s own definition of disclosure at [0031] of specification*], presenting data based on the solution set to at

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least one user [see 0155 “*the new solution set*”], receiving at least one input from the at least one user [see 0155 “*the completion criteria*”], the at least one input based on the at least one user's evaluation of the presented solution set [see 0155 “*expert knowledge provided by a user, may be learned through query to an external source, or may be provided in any like manner.*”], and, based on the at least one input, using at least the evolutionary scheme and the at least one input to generate an updated solution set [see 0155 “*if the completion criteria is not satisfied, the new solution set replaces the first solution set*”], and repeating the presenting and receiving [see 0155 “*the method is repeated (block 124)*”].

Regarding claim 2. *Pelikan et al.* describes a method according to claim 1, where the at least one user input includes at least one of [Examiner interprets this as one of the following]: a rank of solutions in the solution set, a rating of solutions in the solution set, one or more fitness values [see 0035], a selection of a solution in the solution set [see 0035], a selection of a feature of at least one solution in the solution set, a termination of the method, an identification of parents for a genetic algorithm, at least one constraint, a modification of at least one constraint, a modification of at least one genetic operator, and a specification of at least one genetic operator.

Regarding claim 3. *Pelikan et al.* describes a method according to claim 2, where the at least one genetic operator includes at least one of: selection [see 0035], crossover, mutation, and elitism.

Regarding claim 4. *Pelikan et al.* describes a method according to claim 1, where the method is terminated based on the at least one user input [see 0178].

Regarding claim 5. *Pelikan et al.* describes a method according to claim 1, where presenting data based on a solution set to the at least one user includes at least one of: presenting data based on the solution set in parallel [see 2004] & [see 2005], and presenting data based on the solution set in sequential order [see 2004] & [see 2005].

Regarding claim 6. *Pelikan et al.* describes a method according to claim 1, where receiving at least one input includes aggregating (*cluster*) the at least one input [see 0178 *Examiner interprets aggregating as clustering or a set*].

Regarding claim 7. *Pelikan et al.* describes a method according to claim 1, where receiving at least one input includes weighting the at least one input from the at least one user [see 0034 & 0050, *Examiner interprets the user as the expert and weighting as probability distribution*].

Regarding claim 8. *Pelikan et al.* describes a method according to claim 1, where using at least the evolutionary scheme and the at least one input to generate an updated solution set includes updating the solution set based on a time since presenting the data based on the solution set to the at least one user [see 0057 & 0058]

Regarding claim 9. *Pelikan et al.* describes a method according to claim 1, where using at least the evolutionary scheme and the at least one input to generate an updated solution set includes: generating a population based on the evolutionary scheme [see 0035] and the at least one user

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input [*see 0034 Examiner interprets an expert as a user*], and, applying the population to at least one data set [*see 0055*].

Regarding claim 10. *Pelikan et al.* describes a method according to claim 1, where using at least the evolutionary scheme and the at least one input to generate an updated solution set includes: based on whether a condition is satisfied, iteratively using the evolutionary scheme and the at least one user input to generate an updated solution set before presenting the data based on the solution set to the at least one user [*see 0021 & 0034*].

Regarding claim 11. *Pelikan et al.* describes a method according to claim 10, where the condition includes at least one of satisfying a number of generations [*see 0038*], satisfying a fitness function level [*see 0040 & 0041*], achieving a specified distance between solution alternatives [*see 0045*], and achieving a diverse population [*see 0021*].

Regarding claim 12. *Pelikan et al.* describes a method according to claim 1, where using at least the evolutionary scheme and the at least one input to generate an updated solution set includes applying at least one constraint (*Examiner interprets a constraint as the state of being checked, restricted, or or compelled to avoid or perform some action*) to the at least one data set [*see 0072 Examiner interprets data set as a collection of related information made up of separate elements that can be treated as a unit in data handling e.g., Fig. 2(a)*].



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Regarding claim 13. *Pelikan et al.* describes a method according to claim 12, where applying at least one constraint include weighting the at least one constraint [see 0071 *Examiner interprets the weighting as a function of the Bayesian probabilistic modeling “conditional probabilities”*].

Regarding claim 14. *Pelikan et al.* describes a method according to claim 14, where weighting includes weighting based on a user associated with the constraint [see 0155 *Examiner interprets this in relation to Fig. 1, where the user is completion criteria may be the result of, for example, expert knowledge provided by a user, which are probabilistic values*].

Regarding claim 15. *Pelikan et al.* describes a method according to claim 1, where presenting data based on a solution set includes identifying solutions from the solution set to present to the at least one user [see 0155 *Examiner interprets this as “using the model to generate a third set of solutions (block 118). The members of this third set of solutions are then integrated into the first solution set, with at least a portion of the first solution set replaced to create a new solution set.”*].

Regarding claim 16. *Pelikan et al.* describes a method according to claim 15, where identifying solutions includes identifying based on at least one constraint (*Examiner interprets a constraint as the state of being checked, restricted, or or compelled to avoid or perform some action*) [see 0155 *Examiner interprets (block 122) as a decision point at which some action has to be performed in order for processing to continue or terminate*].

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Regarding claim 17. *Pelikan et al.* describes a method according to claim 15, where identifying solutions includes identifying based on a best fit [see 0155 “The completion criteria may be related, by way of example, to the quality or *fitness of the ultimate solution.*”].

Regarding claim 18. *Pelikan et al.* describes a method according to claim 1, where presenting data based on a solution set includes presenting at least one of collective behavior [see 2005 *Examiner interprets collective behavior as the plurality of computers workings to achieved a solution*], at least one physical property of at least one solution in the solution set, at least one statistical measure, and at least one statistical plot.

Regarding claim 19. *Pelikan et al.* describes a method according to claim 1, where the at least one user input is asynchronously (*Examiner interprets asynchronous as characteristic of something that is not dependent upon on timing*) obtained. [see 0034 “the first solution set may be generated according to a uniform distribution, or according to a distribution that is biased according to some expert or prior knowledge of the problem at hand.” *Examiner interprets an expert as a possible user*].

Regarding claim 20. *Pelikan et al.* describes a method according to claim 1, further comprising modifying at least one solution of the solution set based on at least one input from the at least one user. [see 0039 & 0040]

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Regarding claim 21. *Pelikan et al.* describes a system [see 0036], comprising:

at least one processor in communications with at least one display [see 0203 “*executed by a computer*”], the at least one processor having instructions [see 0203] for causing the at least one processor to: present on the at least one display [see 0203], data based on a solution set to at least one user [see 0155 “*the new solution set*”], the solution set based on an evolutionary scheme [see 0010, 0032 “*Bayesian optimization method*” & 0035 “*Embodiments of the present invention will be useful using any selection operator that are commonly known for use in genetic and other evolutionary optimization methods.*”] in which an objective function is a priori mathematically unexpressed [see 0035 “*Fitness function*”, note, per applicant’s own definition [see 0031] of own specification], receive at least one input from the at least one user [0155 “*completion criteria*”], the at least one input based on the at least one user’s evaluation of the presented solution set [see 0155 “*expert knowledge provided by a user, may be learned through query to an external source, or may be provided in any like manner.*”], and, based on the at least one user input, use at least the evolutionary scheme and the at least one input to generate an updated solution set [see 0155 “*if the completion criteria is not satisfied, the new solution set replaces the first solution set*”], and iteratively repeat the present and receive instructions [see 0155 “*the method is repeated (block 124)*”].

## Correspondence Information

13. Any inquires concerning this communication or earlier communications from the examiner should be directed to Michael B. Holmes, who may be reached Monday through Friday, between 8:00 a.m. and 5:00 p.m. EST. or via telephone at (571) 272-3686 or facsimile

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transmission (571) 273-3686 or email [Michael.holmesb@uspto.gov](mailto:Michael.holmesb@uspto.gov).

If you need to send an Official facsimile transmission, please send it to (703) 746-7239.

If attempts to reach the examiner are unsuccessful the Examiner's Supervisor, Anthony Knight, may be reached at (571) 272-3687.

Hand-delivered responses should be delivered to the Receptionist @ (Customer Service Window Randolph Building 401 Dulany Street Alexandria, VA 22313), located on the first floor of the south side of the Randolph Building.

A handwritten signature in black ink, appearing to read 'Michael B. Holmes', with a stylized flourish at the end.

**Michael B. Holmes**

Patent Examiner  
Artificial Intelligence  
Art Unit 2121

United States Department of Commerce  
Patent & Trademark Office

*Wednesday, February 16, 2005*

*MBH*